Game Design and Development

Introduction

The world is going digital. Entertainment is no exception. Sales of computer and video games have grown consistently over the past ten years and the industry is predicted to expand even more. In 2008, computer and video game software sales hit approximately $11 billion, a 26 percent increase from 2007. Non-entertainment industries such as education, government, health, military, science, corporate training, first responders, and social change are also embracing the game technology. Serious games feature the use of interactive game technologies within non-entertainment sectors for training, advertising, simulation, or education.

Modern games are among the most demanding of computer programming applications, requiring knowledge of advanced mathematics and physics which form the basis of the 3D graphics, artificial intelligence, and game engines that make up the game programs. Using core skills in art and design such as drawing, digital imaging and animation, game artists create the visual elements necessary for the game including heads-up interface components, 3D environments and 3D characters. To be successful in the industry, you must be skilled in your area of expertise (*computer science or art*), be able to work with your counterparts, and apply those skills to creating games.

The Game Design and Development curriculum is based on a firm foundation of both computer science and art. Students will develop deeper skills in either art or computer science, before joining back together in the three capstone advanced project courses. These courses simulate industry by creating games using a team environment.

Program Requirements for the Art Concentration

Total for Graduation	120 credits
General Education	43 credits
Major Studies	77 credits

General Education

43 credits required

A. Communication Skills — 8 credits

ENGL-101	Freshman English – Composition *or*	
ENGL-111	Freshman English – Honors I	3
ENGL-102	Freshman English – Reading and Related Writing or	
ENGL-112	Freshman English – Honors II	3
SPCOM-100	Fundamentals of Speech	2

B. Analytic Reasoning — 7 credits

CS-144	Computer Science I	3
MATH-121	Introductory College Mathematics II	4

C. Health and Physical Education — 2 credits

Courses must be from areas of health, physical education or nutrition.

D. Humanities and the Arts — 9 credits

ART-101	Two Dimensional Design Foundations	3
LIT-208	Fiction into Film	3

Remaining course must be from one of the following areas including, art history, music appreciation, foreign language and culture, history, and philosophy.

E. Social and Behavioral Sciences — 9 credits

Courses must be from three or more areas including anthropology, economics, geography, political science, psychology and sociology.

F. Natural Sciences (with Lab) — 4 credits

PHYS-250	The Physics of Light and Color	3
Additional credit of approved natural sciences		1

G. Technology — 2 credits

H. General Education Electives — 2 credits

Major Studies

77 credits required

Game Design and Development Core — 29 credits

ARTH-2XX	History of Interactive Media	3
CS-248	Web and Internet Programming	3
EDUC-170	Video Games and Simulations in Educational Environments	2
ENGL-415	Technical Writing	3
GDD-101	Introduction to Video and Computer Game Design and Development	3
GDD-325	Two Dimensional Game Design and Development	4
GDD-450	Three Dimensional Game Design and Development I	4
GDD-451	Three Dimensional Game Design and Development II	4
GDD-XXX	Culture and Sociology of Video Games	3

Required Art Concentration Courses — 48 credits

ART-100	Drawing I	3
ART-103	Three Dimensional Design Foundations	3
ART-200	Drawing II	3
ART-301	Life Drawing I	3
ARTH-222	Introduction to Art	3
DES-200	Design Theory and Methods	3
DES-205	Presentation Techniques	3
DES-220	Introduction to 2D Digital Imaging	3
DES-325	Multimedia Web Design	3
DES-370	Interface Design	3
DES- 372	3D Modeling and Animation I	3
DES-373	Digital Characters	3
DES-374	3D Modeling and Animation II	3
DES-376	Digital Narrative I: Animation and Video for Multimedia	3
DES-377	Digital Content Design	3
DES-381	Advanced Computer Animation	3

Program Requirements for the Computer Science Concentration

Total for Graduation ..... 120 credits
General Education ..... 43 credits
Major Studies ..... 77 credits

General Education

43 credits required

A. Communication Skills **8 credits**

ENGL-101	Freshman English – Composition *or*	
ENGL-111	Freshman English – Honors I	3
ENGL-102	Freshman English – Reading and Related Writing *or*	
ENGL-112	Freshman English – Honors II	3
SPCOM-100	Fundamentals of Speech	2

B. Analytic Reasoning **8 credits**

CS-144	Computer Science I	3
MATH-156	Calculus and Analytic Geometry I	5

C. Health and Physical Education **2 credits**

Courses must be from areas of health, physical education or nutrition.

D. Humanities and the Arts **9 credits**

ART-101	Two Dimensional Design Foundations	3
LIT-208	Fiction into Film	3

Remaining course must be from one of the following areas including, art history, music appreciation, foreign language and culture, history, and philosophy.

E. Social and Behavioral Sciences **9 credits**

Courses must be from three or more areas including anthropology, economics, geography, political science, psychology and sociology.

F. Natural Sciences (with Lab) **5 credits**

PHYS-281	University Physics	5

G. Technology **2 credits**

Major Studies

77 credits required

Game Design and Development Core **29 credits**

ARTH-2XX	History of Interactive Media	3
CS-248	Web and Internet Programming	3
EDUC-170	Video Games and Simulations in Educational Environments	2
ENGL-415	Technical Writing	3
GDD-101	Introduction to Video and Computer Game Design and Development	3
GDD-325	Two Dimensional Game Design and Development	4
GDD-450	Three Dimensional Game Design and Development I	4
GDD-451	Three Dimensional Game Design and Development II	4
GDD-XXX	Culture and Sociology of Video Games	3

Computer Science, Math and Statistics Courses **48 credits**

CS-145	Computer Science II	3
CS-244	Data Structures	4
CS-245	Introduction to Computer Organization	3
CS-343	Mathematical Foundations of Computer Graphics	3
CS-3XX	Algorithms and Artificial Intelligence	3
CS-441	Computer Architecture	3
CS-442	Systems Programming	3
CS-443	Database Systems Manipulation and Design	3
CS-448	Software Engineering	3
MATH-157	Calculus and Analytic Geometry II	5
MATH-158	Calculus III	3
MATH-270	Discrete Mathematics	3
MATH-275	Linear Algebra	3
PHYS-360	Physics Modeling for Game Programmers	3
STAT-330	Probability and Statistics for Engineering and the Sciences	3